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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 10/597,781 | 08/08/2006 | Daniel R. Swiler | FER-15400.001.001 | 6294 |

7609 7590 01/05/2010

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| EXAMINER | |
|---|---|
| JOHNSON, SONJI N | |
| ART UNIT | PAPER NUMBER |
| 2887 | |

| MAIL DATE | DELIVERY MODE |
|---|---|
| 01/05/2010 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/597,781 | SWILER ET AL. | |
| | Examiner | Art Unit | |
| | SONJI JOHNSON | 2887 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *08 August 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-43* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-43* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *08 August 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *11/06/2006, 01/31/2007*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-4, 8-17, 21-27, 29, 30-32, 36-42 and 44-45 are rejected under 35 U.S.C. 102(b) as being anticipated by Acitelli et al. US Patent No. 4, 540, 595,cited by applicant.

**Re claim 1**, Acitellli discloses a method of forming and detecting a mark on a `` substrate comprising:

applying a marking material (markings 35) to the substrate to form a mark that reflects or absorbs radiation at a predetermined wavelength within the range of from about 0.75 μm to about 40 μm at a sufficiently different level than the substrate adjacent to the mark such that the mark can be discerned from the substrate at the predetermined wavelength (Column 4, lines 38-45); applying a cover (ordinary ink markings 30-340) coating material comprising an inorganic pigment (wherein the ink is known to comprise of inorganic pigments) over the mark (35) and over at least a portion of the substrate adjacent to the mark to form a cover coat that appears substantially opaque in the visible portion of the electromagnetic spectrum but is sufficiently transmissive of radiation emitted at the predetermined wavelength that the mark can be discerned from the substrate through the cover coat at the predetermined

wavelength; and detecting the mark applied to the substrate using an infrared detecting device (Column 3, lines 38-45, the ordinary ink markings 30-34 are applied on top of the markings 35 as shown in fig 4, the ordinary ink markings 30-34 has high reflectance as shown in Fig 5 and thus light in the near infrared wavelength would be transmitted by the ink and thus the marking material 35 reflects or absorbs infrared radiation at a sufficiently different level than the substrate, and then applying the cover coating material 30-34 over the mark and the substrate that is substantially opaque in the visible portion of the electromagnetic spectrum but is transmissive of radiation in the infrared portion and detecting the mark using an infrared detecting device).

**Re claim 2**, Acitelli discloses the method according to claim 1 wherein the substrate is a surface of a part for installation in a land vehicle or aircraft (Column 1, lines 10-11) .

**Re claim 3**, Acitelli discloses the method according to claim 1 wherein the substrate is a primer coat layer applied to a surface of an article (Column 1, lines 10-11).

**Re claim 4**, Acitelli discloses the method according to claim 1, wherein the marking material comprises and infrared reflective inorganic pigment (wherein it is inherent that ink comprises of infrared reflective inorganic pigment).

**Re claim 8**, Acitellli discloses the method according to claim 1 wherein the substrate is selected from the group consisting of metal, glass, wood, paper, plastic and ceramic (Column 4, line 38, Fig. 4).

**Re claim 9,** Acitellli discloses the method according to claim 1 wherein the marking material is selected from the group consisting of paint, enamel, laser marking composition, glass, ink, putties and fillers, chemical etchants and transfer films (Column 4, line 44, Fig 4).

**Re claim 10**, Acitellli discloses the method according to claim 1 wherein the cover coating material is selected from the group consisting of paint, glass, enamel, ink, and transfer films (Column 4, lines 54-56).

**Re claim 11**, Acitellli discloses the method according to claim 1 wherein the mark is in the form of a machine-readable code (Column 4, lines 45-46).

**Re claim 12**, Acitellli discloses the method according to claim 1 wherein the inorganic pigment (ink) in the cover coating material is doped with one or more elements such that the inorganic pigment provides a uniquely identifiable spectral curve (Column 4, lines 1-17 and 59-66, Fig 4).

**Re claim 13**, Acitellli discloses the method according to claim 1 wherein the cover coating material comprises two or more different inorganic pigments that together provide a uniquely identifiable spectral curve (Column 4, lines 1-17 and 59-66, Fig 4).

**Re claim 14**, Acitellli discloses a method of forming a durable infrared detectable mark on a substrate comprising:

applying a marking material to the substrate to form a mark;

applying a contrast marking material to the substrate to form a contrast mark proximal to the mark, wherein the mark reflects or absorbs radiation at a predetermined wavelength within the range of from about 0.75 μm to about 40 μm at a sufficiently

different level than the contrast mark such that the mark can be discerned from the contrast mark at the predetermined wavelength; and applying a cover coating material comprising an inorganic pigment over the mark and the contrast mark to form a cover coat that appears substantially opaque in the visible portion of the electromagnetic spectrum but is sufficiently transmissive of radiation emitted at the predetermined wavelength that the mark can be discerned from the contrast mark through the cover coat at the predetermined wavelength (Column 3, lines 38-45, the ordinary ink markings 30-34 are applied on top of the markings 35 as shown in fig 4, the ordinary ink markings 30-34 has high reflectance as shown in Fig 5 and thus light in the near infrared wavelength would be transmitted by the ink and thus the marking material 35 reflects or absorbs infrared radiation at a sufficiently different level than the substrate, and then applying the cover coating material 30-34 over the mark and the substrate that is substantially opaque in the visible portion of the electromagnetic spectrum but is transmissive of radiation in the infrared portion and detecting the mark using an infrared detecting device).

**Re claim 15**, Acitelli discloses the method according to claim 14 wherein the substrate is a surface of a part for installation in a land vehicle or aircraft (Column 1, lines 10-11).

**Re claim 16**, Acitelli discloses the method according to claim 14 wherein the substrate is a primer coat layer applied to a surface of an article (Column 1, lines 10-11).

**Re claim 17**, Acitelli discloses the method according to claim 14, wherein the marking material comprises and infrared reflective inorganic pigment (wherein it is inherent that ink comprises of infrared reflective inorganic pigment)

**Re claim 21,** Acitellli discloses the method according to claim 14 wherein the substrate is selected from the group consisting of metal, glass, wood, plastic and ceramic (Column 4, line 38, Fig. 4).

**Re claim 22**, Acitellli discloses the method according to claim 14 wherein the marking material is selected from the group consisting of paint, enamel, laser marking composition, glass, ink, and transfer films (Column 4, line 44, Fig 4).

**Re claim 23**, Acitellli discloses the method according to claim 14 wherein the cover coating material is selected from the group consisting of paint, glass, enamel, ink, and transfer films (Column 4, lines 54-55)

**Re claim 24**, Acitellli discloses the method according to claim 14 wherein the mark is in the form of a bar code (Column 4, lines 44- 45).

**Re claim 25,** Acitellli discloses the method according to claim 14 wherein the inorganic pigment (ink) in the cover coating material is doped with one or more elements such that the inorganic pigment provides a uniquely identifiable spectral curve (Column 4, lines 1-17 and 59-66, Fig 4).

**Re claim 26**, Acitellli discloses the method according to claim 14 wherein the cover coating material comprises two or more different inorganic pigments that together provide a uniquely identifiable spectral curve (Column 4, lines 1-17 and 59-66, Fig 4).

**Re claim 27,** Acitelli discloses the method according to claim 14, wherein the marking material comprises and infrared reflective inorganic pigment (wherein it is inherent that ink comprises of infrared reflective inorganic pigment).

**Re claim 29,** Acitellli discloses a method of forming a durable infrared detectable mark on a substrate comprising:

applying a marking material to the substrate to form a mark; applying a masking material over a least a portion of the mark and, optionally, over a portion of the substrate, to form a mask, wherein mark reflects or absorbs radiation at a predetermined wavelength within the range of from about 0.75 μm to about 40 μm at a sufficiently different level than the mask such that the mark can be discerned from the mask at the predetermined wavelength; and applying a cover coating material comprising an inorganic pigment over the mark and the mask to form a cover coat that appears substantially opaque in the visible portion of the electromagnetic spectrum but is sufficiently transmissive of radiation emitted at the predetermined wavelength that the mark can be discerned from the mask through the cover coat at the predetermined wavelength (Column 3, lines 38-45, the ordinary ink markings 30-34 are applied on top of the markings 35 as shown in fig 4, the ordinary ink markings 30-34 has high reflectance as shown in Fig 5 and thus light in the near infrared wavelength would be transmitted by the ink and thus the marking material 35 reflects or absorbs infrared radiation at a sufficiently different level than the substrate, and then applying the cover coating material 30-34 over the mark and the substrate that is substantially opaque in

the visible portion of the electromagnetic spectrum but is transmissive of radiation in the infrared portion and detecting the mark using an infrared detecting device).

**Re claim 30,** Acitellli discloses the method according to claim 29 wherein the substrate is a surface of an article (Column 1, lines 10-11).

**Re claim 31**, Acitellli discloses the method according to claim 29 wherein the substrate is a base coat layer applied to a surface of an article (Column 1, lines 10-11).

**Re claim 32**, Acitelli discloses the method according to claim 29, wherein the marking material comprises and infrared reflective inorganic pigment (wherein it is inherent that ink comprises of infrared reflective inorganic pigment).

**Re claim 36**, Acitellli discloses the method according to claim 29 wherein the substrate is selected from the group consisting of metal, glass, wood, plastic and ceramic (Column 4, line 38, Fig. 4).

**Re claim 37**, Acitellli discloses the method according to claim 29 wherein the marking material is selected from the group consisting of paint, enamel, laser marking composition, glass, ink, and transfer films (Column 4, line 44, Fig 4).

**Re claim 38**, Acitellli discloses the method according to claim 29 wherein the cover coating material is selected from the group consisting of paint, glass, enamel, ink, and transfer films (Column 4, lines 54-56).

**Re claim 39**, Acitellli discloses the method according to claim 29 wherein the mark is in the form of a bar code (Column 4, lines 44- 45).

**Re claims 40,** Acitellli discloses the method according to claim 29 wherein the inorganic pigment (ink) in the cover coating material is doped with one or more

elements such that the inorganic pigment provides a uniquely identifiable spectral curve (Column 4, lines 1-17 and 59-66, Fig 4).

**Re claim 41**, Acitellli discloses the method according to claim 29 wherein the cover coating material comprises two or more different inorganic pigments that together provide a uniquely identifiable spectral curve (Column 4, lines 1-17 and 59-66, Fig 4).

**Re claim 42**, Acitelli discloses the method according to claim 29, wherein the marking material comprises and infrared reflective inorganic pigment (wherein it is inherent that ink comprises of infrared reflective inorganic pigment).

**Re claim 44**, Acitellli discloses a multilayer coating comprising a marking layer disposed between a substrate and a cover coating layer that comprises an inorganic pigment, wherein the marking layer reflects or absorbs radiation at a predetermined wavelength within the range of from about 0.75 μ m to about 40 μm at a sufficiently different level than the substrate, and wherein the cover coating layer appears substantially opaque in the visible portion of the electromagnetic spectrum but is sufficiently transmissive of radiation emitted at the predetermined wavelength that the mark can be discerned from the substrate through the cover coat at the predetermined wavelength (Column 3, lines 38-45, the ordinary ink markings 30-34 are applied on top of the markings 35 as shown in fig 4, the ordinary ink markings 30-34 has high reflectance as shown in Fig 5 and thus light in the near infrared wavelength would be transmitted by the ink and thus the marking material 35 reflects or absorbs infrared radiation at a sufficiently different level than the substrate, and then applying the cover coating material 30-34 over the mark and the substrate that is substantially opaque in

the visible portion of the electromagnetic spectrum but is transmissive of radiation in the infrared portion and detecting the mark using an infrared detecting device).

**Re claim 45**, Acitellli discloses an article marked with a non-visible authentication mark comprising a marking layer disposed between a surface of the article and a cover coating layer that comprises an inorganic pigment, wherein the marking layer reflects or absorbs radiation at a predetermined wavelength within the range of from about 0,75 μ m to about 40 μm ,at a sufficiently different level than an area beneath the cover coating adjacent to the marking layer, and wherein the cover coating layer appears substantially opaque in the visible portion of the electromagnetic spectrum but is sufficiently transmissive of radiation emitted at the predetermined wavelength that the mark can be discerned from the area beneath the cover coating adjacent to the marking layer through the cover coat at the predetermined wavelength (Column 3, lines 38-45, the ordinary ink markings 30-34 are applied on top of the markings 35 as shown in fig 4, the ordinary ink markings 30-34 has high reflectance as shown in Fig 5 and thus light in the near infrared wavelength would be transmitted by the ink and thus the marking material 35 reflects or absorbs infrared radiation at a sufficiently different level than the substrate, and then applying the cover coating material 30-34 over the mark and the substrate that is substantially opaque in the visible portion of the electromagnetic spectrum but is transmissive of radiation in the infrared portion and detecting the mark using an infrared detecting device).

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 5-7, 18-20, 28, 33-35 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Acitelli et al. US Patent No. 4, 540, 595, cited by applicant in view of Swiler US Patent No. 6, 485, 557.

**Re claims 5-7,** Acitelli discloses the method according to claim 4.

Acitelli fails to disclose wherein the infrared reflective inorganic pigment is one or more selected from the group consisting of:

$Mn_2V_2O_7$;

$M1_xMnO_7$, where M1 is calcium, strontium, barium, magnesium, yttrium and/or an element selected from the Lanthanide series of the Periodic Table of the Elements, x is a number from about 0.01 to about 99, and y is greater than or equal to X + 1 and less than or equal to X + 2 and designates the number of oxygen atoms required to maintain electroneutrality;

$Bi_2Mn_4O_{10}$; and

solid solutions having a corundum-hematite crystalline structure comprising iron oxide a host component doped with guest elements selected from aluminum, antimony, bismuth, boron, chrome, cobalt, gallium, indium, lanthanum, lithium, magnesium, manganese, molybdenum, neodymium, nickel, niobium, silicon, tin, titanium, vanadium and zinc; and solid solutions having a corundum-hematite crystalline structure

comprising chrome oxide a host component doped with guest elements selected from aluminum, antimony, bismuth, boron, cobalt, gallium, indium, iron, lanthanum, lithium, magnesium, manganese, molybdenum, neodymium, nickel, niobium, silicon, tin, titanium, vanadium and zinc

Swiler discloses wherein the infrared reflective inorganic pigment is $Mn_2V_2O_7$ (Abstract, Column 2, lines 24-26 and Column 3, lines 16-23);

Swiler further discloses wherein the average particle size of the inorganic pigment in the cover coating material is from about 0.02 μ m to about 15 μm (Column 3, lines 24-28).

Swiler further discloses wherein the average particle size of the inorganic pigment in the cover coating material is from about 0.1 μm to about 0.5 μm (Column 3, lines 24-28).

Therefore it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to integrate the teachings of Swiler with the teachings of Acitelli such that the infrared reflective inorganic pigment is $Mn_2V_2O_7$.

The $Mn_2V_2O_7$ as suggested by Swiler is a pigment that is useful as colorants and also possess improved reflectance characteristics in the infrared region thereby reducing IR-induced heat build up (Column 4, lines 37-41).

**Re claims 18-20**, Acitelli discloses the method according to claim 17.

Acitelli fails to disclose wherein the infrared reflective inorganic pigment is one or more selected from the group consisting of:

$Mn_2V_2O_7$;

$M1_xMnO_7$, where M1 is calcium, strontium, barium, magnesium, yttrium and/or an element selected from the Lanthanide series of the Periodic Table of the Elements, x is a number from about 0.01 to about 99, and y is greater than or equal to X + 1 and less than or equal to X + 2 and designates the number of oxygen atoms required to maintain electroneutrality;

$Bi_2Mn_4O_{10}$; and

solid solutions having a corundum-hematite crystalline structure comprising iron oxide a host component doped with guest elements selected from aluminum, antimony, bismuth, boron, chrome, cobalt, gallium, indium, lanthanum, lithium, magnesium, manganese, molybdenum, neodymium, nickel, niobium, silicon, tin, titanium, vanadium and zinc; and solid solutions having a corundum-hematite crystalline structure comprising chrome oxide a host component doped with guest elements selected from aluminum, antimony, bismuth, boron, cobalt, gallium, indium, iron, lanthanum, lithium, magnesium, manganese, molybdenum, neodymium, nickel, niobium, silicon, tin, titanium, vanadium and zinc

Swiler discloses wherein the infrared reflective inorganic pigment is $Mn_2V_2O_7$ (Abstract, Column 2, lines 24-26 and Column 3, lines 16-23);

Swiler further discloses wherein the average particle size of the inorganic pigment in the cover coating material is from about 0.02 μm to about 15 μm (Column 3, lines 24-28).

Swiler further discloses wherein the average particle size of the inorganic pigment in the cover coating material is from about 0.1 μm to about 0.5 μm (Column 3, lines 24-28).

Therefore it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to integrate the teachings of Swiler with the teachings of Acitelli such that the infrared reflective inorganic pigment is $Mn_2V_2O_7$.

The $Mn_2V_2O_7$ as suggested by Swiler is a pigment that is useful as colorants and also possess improved reflectance characteristics in the infrared region thereby reducing IR-induced heat build up (Column 4, lines 37-41).

**Re claim 28**, Acitelli discloses the method according to claim 27.

Acitelli fails to disclose wherein the infrared reflective inorganic pigment is one or more selected from the group consisting of:

$Mn_2V_2O_7$;

$M1_xMnO_7$, where M1 is calcium, strontium, barium, magnesium, yttrium and/or an element selected from the Lanthanide series of the Periodic Table of the Elements, x is a number from about 0.01 to about 99, and y is greater than or equal to X + 1 and less than or equal to X + 2 and designates the number of oxygen atoms required to maintain electroneutrality;

$Bi_2Mn_4O_{10}$; and

solid solutions having a corundum-hematite crystalline structure comprising iron oxide a host component doped with guest elements selected from aluminum, antimony, bismuth, boron, chrome, cobalt, gallium, indium, lanthanum, lithium, magnesium,

manganese, molybdenum, neodymium, nickel, niobium, silicon, tin, titanium, vanadium and zinc; and solid solutions having a corundum-hematite crystalline structure comprising chrome oxide a host component doped with guest elements selected from aluminum, antimony, bismuth, boron, cobalt, gallium, indium, iron, lanthanum, lithium, magnesium, manganese, molybdenum, neodymium, nickel, niobium, silicon, tin, titanium, vanadium and zinc

Swiler discloses wherein the infrared reflective inorganic pigment is $Mn_2V_2O_7$ (Abstract, Column 2, lines 24-26 and Column 3, lines 16-23);

Therefore it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to integrate the teachings of Swiler with the teachings of Acitelli such that the infrared reflective inorganic pigment is $Mn_2V_2O_7$.

The $Mn_2V_2O_7$ as suggested by Swiler is a pigment that is useful as colorants and also possess improved reflectance characteristics in the infrared region thereby reducing IR-induced heat build up (Column 4, lines 37-41).

**Re claims 33-35**, Acitelli discloses the method according to claim 32.

Acitelli fails to disclose wherein the infrared reflective inorganic pigment is one or more selected from the group consisting of:

$Mn_2V_2O_7$;

$M1_xMnO_7$, where M1 is calcium, strontium, barium, magnesium, yttrium and/or an element selected from the Lanthanide series of the Periodic Table of the Elements, x is a number from about 0.01 to about 99, and y is greater than or equal to X + 1 and less

than or equal to X + 2 and designates the number of oxygen atoms required to maintain electroneutrality;

$Bi_2Mn_4O_{10}$; and

solid solutions having a corundum-hematite crystalline structure comprising iron oxide a host component doped with guest elements selected from aluminum, antimony, bismuth, boron, chrome, cobalt, gallium, indium, lanthanum, lithium, magnesium, manganese, molybdenum, neodymium, nickel, niobium, silicon, tin, titanium, vanadium and zinc; and solid solutions having a corundum-hematite crystalline structure comprising chrome oxide a host component doped with guest elements selected from aluminum, antimony, bismuth, boron, cobalt, gallium, indium, iron, lanthanum, lithium, magnesium, manganese, molybdenum, neodymium, nickel, niobium, silicon, tin, titanium, vanadium and zinc

Swiler discloses wherein the infrared reflective inorganic pigment is $Mn_2V_2O_7$ (Abstract, Column 2, lines 24-26 and Column 3, lines 16-23);

Swiler further discloses wherein the average particle size of the inorganic pigment in the cover coating material is from about 0.02 μm to about 15 μm (Column 3, lines 24-28).

Swiler further discloses wherein the average particle size of the inorganic pigment in the cover coating material is from about 0.1 μm to about 0.5 μm (Column 3, lines 24-28).

Therefore it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to integrate the teachings of Swiler with the teachings of Acitelli such that the infrared reflective inorganic pigment is $Mn_2V_2O_7$.

The $Mn_2V_2O_7$ as suggested by Swiler is a pigment that is useful as colorants and also possess improved reflectance characteristics in the infrared region thereby reducing IR-induced heat build up (Column 4, lines 37-41).

**Re claim 43**, Acitelli discloses the method according to claim 42.

Acitelli fails to disclose wherein the infrared reflective inorganic pigment is one or more selected from the group consisting of:

$Mn_2V_2O_7$;

$M1_xMnO_7$, where M1 is calcium, strontium, barium, magnesium, yttrium and/or an element selected from the Lanthanide series of the Periodic Table of the Elements, x is a number from about 0.01 to about 99, and y is greater than or equal to X + 1 and less than or equal to X + 2 and designates the number of oxygen atoms required to maintain electroneutrality;

$Bi_2Mn_4O_{10}$; and

solid solutions having a corundum-hematite crystalline structure comprising iron oxide a host component doped with guest elements selected from aluminum, antimony, bismuth, boron, chrome, cobalt, gallium, indium, lanthanum, lithium, magnesium, manganese, molybdenum, neodymium, nickel, niobium, silicon, tin, titanium, vanadium and zinc; and solid solutions having a corundum-hematite crystalline structure comprising chrome oxide a host component doped with guest elements selected from

aluminum, antimony, bismuth, boron, cobalt, gallium, indium, iron, lanthanum, lithium, magnesium, manganese, molybdenum, neodymium, nickel, niobium, silicon, tin, titanium, vanadium and zinc

Swiler discloses wherein the infrared reflective inorganic pigment is $Mn_2V_2O_7$ (Abstract, Column 2, lines 24-26 and Column 3, lines 16-23);

Therefore it would have been obvious to an artisan of ordinary skill in the art at the time the invention was made to integrate the teachings of Swiler with the teachings of Acitelli such that the infrared reflective inorganic pigment is $Mn_2V_2O_7$.

The $Mn_2V_2O_7$ as suggested by Swiler is a pigment that is useful as colorants and also possess improved reflectance characteristics in the infrared region thereby reducing IR-induced heat build up (Column 4, lines 37-41).

***Conclusion***

The prior art made of record but not relied upon is considered pertinent to applicant's disclosure:

Gardner et al. (US Patent No. 6, 813, 011) discloses a method for associating source information with a substrate, which includes providing at least one latent marking agent that emits a signal at an emission wavelength in response to being irradiated with infrared radiation at an excitation wavelength, wherein the signal is at least a portion of the source information; and affixing the at least one latent marking agent to the substrate, a process for providing an ink with a viscosity for effective printing of the source information on the substrate.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SONJI JOHNSON whose telephone number is 571-270-5266. The examiner can normally be reached on Monday-Thursday 7:30 AM -6:30 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steve S. Paik can be reached on 571-272-2404. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/SONJI JOHNSON/
Examiner, Art Unit 2887

/S. J./
Examiner, Art Unit 2887

/Kumiko C. Koyama/
Primary Examiner, Art Unit 2887